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Case Report

Dumbbell-Shaped Epidural Capillary Hemangioma

Bruno Badinand, Christophe Morel, Nicolas Kopp, Van A. Tran Min, and François Cotton

Summary: We report a case of a purely epidural capillary hemangioma of the thoracic spine with foraminal extension. Epidural hemangiomas are rare; only a few cases of dumbbell-shaped ones have been reported, and all were cavernous. MR imaging showed characteristic findings of a capillary hemangioma, which are also consistent with other epidural lesions such as neuromas or meningiomas.

Hemangiomas of the spine are usually lesions of the vertebral bodies, and purely epidural hemangiomas are rare. Few cases of epidural cavernous hemangiomas have been reported, and descriptions of capillary hemangiomas at this location are extremely rare in the literature. We report a case of a purely epidural capillary hemangioma with foraminal extension. The MR imaging findings are presented.

Case Report

A 40-year-old woman presented with a 1-year history of progressive pain and muscular contracture of her lower limbs. The patient also had a recent onset of motor deficit in the lower limbs, which caused difficulties with walking and sphincteric problems. Her medical history was unremarkable except for a duodenal ulcer, which was not treated, and endometriosis. On physical examination, the patient's motor strength in her lower limbs was decreased. This finding was associated with hypesthesia and a brisk osteotendinous reflex. Imaging of the dorsal spine showed thinning of the left pedicle at T4 on radiographs (Fig 1) and widening of the left foramen at T3-T4 on CT scans. On MR images, the lesion was a well-circumscribed and probably epidural mass that extended from T2 to T4, with extension to the left foramen at T3-T4, as shown on coronal images. The lesion was 15 mm thick, 30 mm wide (including foraminal extension), and 40 mm long. On T1-weighted (600/15) sagittal MR images, the mass had homogeneous intermediate signal intensity similar to that of the spinal cord (Fig 2A), and on T2-weighted (3000/120) sagittal images, it had homogeneous high signal intensity (Fig 2B). The mass was surrounded by a rim of low signal intensity on both images. The T1-weighted sagittal and coronal images obtained after the intravenous administration of gadolinium-based contrast agent showed mostly intense homogeneous enhancement of the mass (Fig 2C), as well as clear extension to the left foramen at T3-T4 (Fig 3). The preoperative differential diagnosis included neuroma and meningioma. T2-T4 laminectomy revealed a red-purple hemorrhagic epidural mass that was relatively well encapsulated. The mass was easily cleaved, and excision was easy except

for the foraminal extension, which was not removed. Pathologic examination showed a vascular tumor composed of thin and irregular capillary vessels caught in low-attenuating fibrosis. This finding was consistent with a capillary hemangioma (Fig 4). Follow-up MR imaging performed 8 months later showed at last no signs of residual tumor.

Discussion

Hemangiomas are congenital vascular malformations that pathologists frequently consider to be hamartomatous malformations (1). They are classified by the predominant type of vascular channel (capillary, cavernous, arteriovenous or venous) observed at histologic examination. Nonvascular components may also be observed, particularly in cavernous hemangiomas. These components include fat, smooth muscle, fibrous tissue, and hemosiderin (2).

Usual locations are in the soft tissue (3), in cutaneous or subcutaneous tissues, or in osseous tissue, especially that in spinal column. The lesions have been detected in 11% of spines examined at autopsy (4). Purely vertebral hemangiomas are common, and epidural hemangiomas are actually considered to be an extension of vertebral lesions in the epidural space (1, 5). They are generally isolated. Purely epidural hemangiomas are rare.

Few groups have reported cases of purely epidural lesions (1, 5, 6). Some of these lesions were dumbbell-

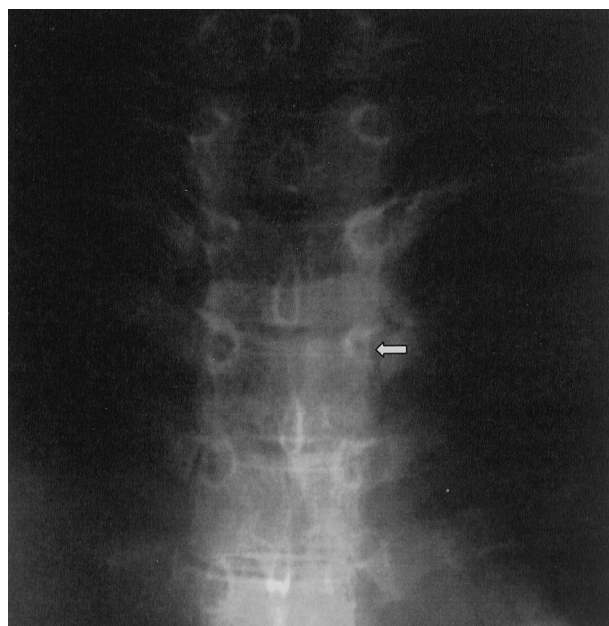


FIG 1. Anteroposterior radiograph of the thoracic spine shows a thinning of the left pedicle at the T3-T4 level (arrow)

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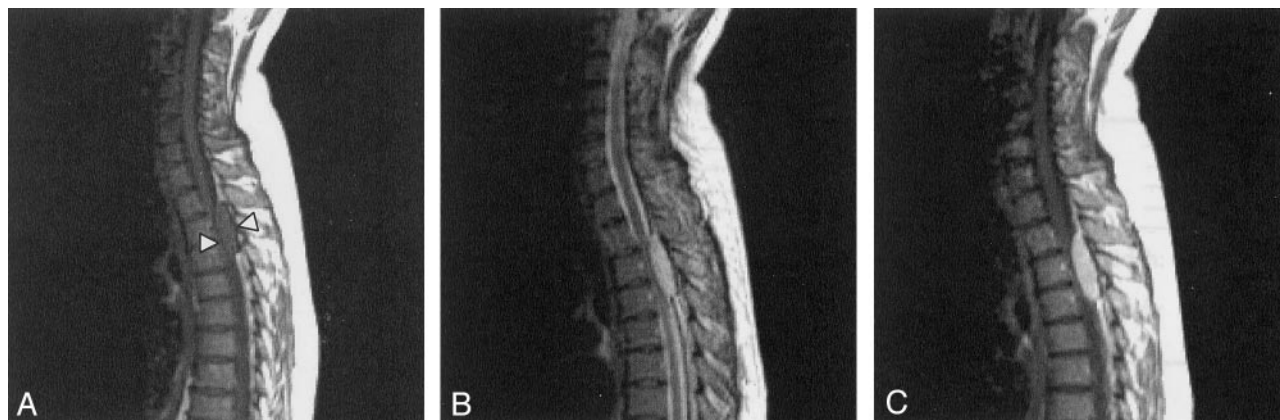


FIG 2. Sagittal MR images.

A, T1-weighted image (600/15) shows a mass, probably epidural, with homogeneous isointensity relative to the spinal cord. The mass is surrounded by a rim of low signal intensity (*arrowheads*) located at the T2–T4 level.

B, T2-weighted image (3000/120) shows the homogeneously hyperintense mass surrounded by a rim of low signal intensity.

C, Gadolinium-enhanced T1-weighted image shows mostly intense, homogeneous enhancement of the lesion.

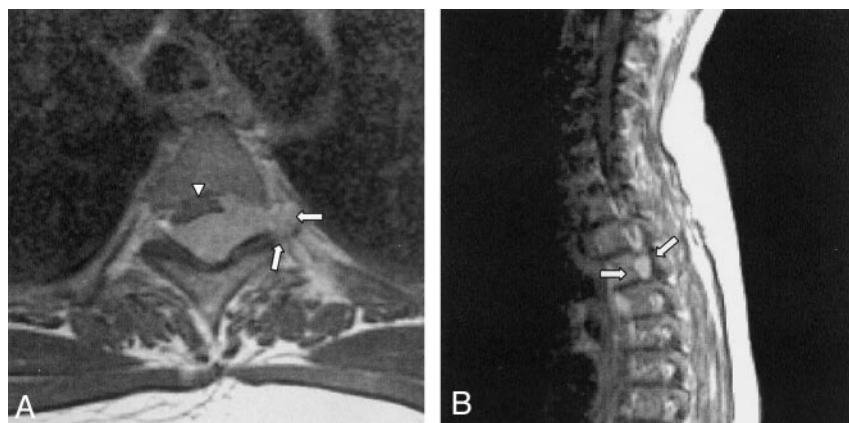


FIG 3. Gadolinium-enhanced T1-weighted MR images clearly show extension to the left foramen at T3–T4 (*arrows*).

A, Axial image. The epidural mass compresses the anterior aspect of the thoracic spine (*arrowhead*).

B, Sagittal image.

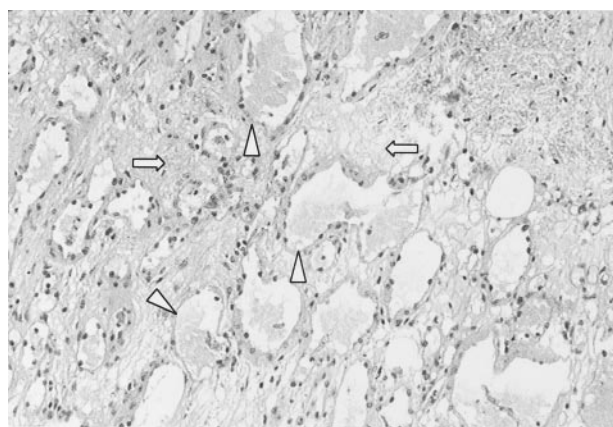


FIG 4. Photomicrograph obtained at histologic examination shows a tumor composed of thin and irregular capillary vessels (*arrowheads*) caught in low-attenuating fibrosis (*arrows*) (hematoxylin and eosin, original magnification $\times 100$).

shaped and located in the thoracic spine (5), but all were a cavernous type of hemangioma. To our knowledge, only one publication has reported a case of a purely epidural capillary hemangioma of the spine (7). We did not find any other examples of foraminal extension of this specific type in the literature.

The MR imaging findings in this case are similar to those found in previously reported cases of extraosseous capillary hemangioma (3, 4, 7). They are closely connected at pathologic examination, which shows capillary vessels caught in low-attenuating fibrosis without fat or hemosiderin components. This finding explains the homogeneous aspect and the isointense signal relative to the spinal cord on T1-weighted images, as some authors have described (2). The rim of low signal intensity seen on T1- and T2-weighted MR images may correspond with the encapsulated aspect observed during surgery, and it could suggest the benignity of the tumor. On T1- and T2-weighted sagittal images, the low signal intensity at the anterior part of the lesion may also correspond to the posterior longitudinal ligament. Therefore, it may be an important landmark for the epidural location of the lesion.

Nevertheless, these radiologic aspects are nonspecific. Well-circumscribed tumors and the dumbbell shape on MR images are also commonly found with other benign tumors such as neuroma or meningioma. This case reminds us that hemangioma should be considered in the differential diagnosis of epidural lesions.

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